United States Environmental Protection Agency
Criminal Investigation Division
Investigative Activity Report

Case Number
1002-0097

Case Title:
Fortymile: [redacted] Placer Mine Investigation (APMA [redacted]

Reporting Office:
Anchorage, AK, Resident Office

Subject of Report:
Mine Discharge Investigation at the APMA [redacted] Mine 08-22-13

Activity Date:
August 22, 2013

Reporting Official and Date:
[redacted]
Resident Agent in Charge
23-JAN-2014, Signed by: [redacted]

Approving Official and Date:
[redacted]
Special Agent in Charge
27-JAN-2014, Approved by: [redacted]
Special Agent in Charge

SYNOPSIS

On 08/22/13, an open field search on state public lands, a consensual open field search on a federal patented claim, and turbidity monitoring in United States waters were conducted at and near the [redacted] mine site along Canyon, Woods, and Camp Creeks in Alaska's Fortymile Mining District. Documentation of this site includes photographs and video recordings made by multiple investigators from aircraft and at the mine site, audio recordings of contacts with permittee / operator / claim holder [redacted] interview reports, and turbidity monitoring of the discharge and of the receiving stream(s).

This report was reviewed and confirmed prior to submission for supervisor approval by the following EPA Special Agents: [redacted] and [redacted]

This sheet is intended as an approval sheet for the attached narrative, incorporating diagram(s), photographs, and footnotes.

DETAILS

This sheet is intended as an approval sheet for the attached narrative, incorporating diagram(s), photographs, and footnotes. See approved attachment(s).

ATTACHMENT
Yes (39 pages)

Case Title: **Reporting Agent:**
Fortymile: Mine Investigation APMA [redacted] ([redacted] RAC [redacted]

Attachment to IAR Titled:
Mine Discharge Investigation at the APMA [redacted] [redacted] Mine (08/22/13)

Table of Contents

1.0 Report Synopsis

On 08/22/13, an open field search on state public lands, a consensual open field search on a federal patented claim, and turbidity monitoring in United States waters were conducted at and near the [redacted] mine site(s) along Canyon, Woods, and Camp Creeks in Alaska's Fortymile Mining District. [redacted] mine site is further referenced by means of **APMA** [redacted] operating under APDES General Permit [redacted] As reported below, an unpermitted discharge into U.S. waters was documented by criminal investigators on this date.

Documentation of this site includes photographs and video recordings made by multiple investigators from aircraft and at the mine site, audio recordings of field contacts made with permittee / operator / claim holder [redacted] his wife [redacted] and their adult son [redacted] interview reports, turbidity monitoring of the discharge and of the receiving stream.

This report was reviewed and confirmed prior to submission for supervisor approval by the following EPA Special Agents: [redacted] [redacted] [redacted] [redacted] and [redacted]

2.0 Over Flights Prior To Mine Discharge Investigation

On 08/19/13, 08/20/13, 08/21/13, and 08/22/13, an unmarked federally-owned law enforcement aircraft overflew what was later identified to be the [redacted] mechanical placer mine site, APMA[redacted] operating under APDES General Permit [redacted]. This aircraft, a Cessna 206, was piloted by BLM Special Agent [redacted] with EPA Special Agent [redacted] serving as a spotter and photographer. Review of photographs and video taken by Special Agent [redacted] during these over flights revealed apparent turbid discharges into Canyon Creek from the mine's final settling pond in a long network of interconnected turbid settling ponds and ditches. No photographs or video of [redacted] mine were made during the 08/21/13 over flight; however, a turbid discharge was observed by Special Agent [redacted] from the mine's final settling pond into Canyon Creek on this day.

Photograph 1 was taken from the aircraft by Special Agent [redacted] on 08/19/13 at approximately 2:31PM and depicts an apparent discharge from the mine's final settling pond into Canyon Creek. Reference IMG0011.

Photo 1: Final settling pond with turbid discharge into creek on 08/19/13.

Photograph 2 was taken by Special Agent [redacted] on 08/20/13 at approximately 12:40PM and depicts an apparent discharge from the mine's final settling pond into Canyon Creek. Reference DSC0090.

Photo 2: Final settling pond with turbid discharge into creek on 08/20/13.

Photograph 3 and **Photograph 4** were taken by Special Agent [redacted] on 08/22/13 at approximately 11:51AM and depict an apparent discharge from the mine's final settling pond into Canyon Creek. Reference DSCN1618 and DSCN1616.

Photo 3: Final pond with turbid discharge on morning of 08/22/13.

Photo 4: Same as Photo 3.

3.0 Mine Transit on August 21, 2013

On 08/21/13 at approximate 10:22AM, an investigative ground team comprised of EPA Special Agent [redacted] EPA Special Agent [redacted] BLM Special Agent [redacted] and BLM Special Agent [redacted] attempted to enter the Canyon Creek drainage area from the south by means of ATV, along a public-access gravel road.[1] Access to the gravel road was made from the Top of the World Highway, near the Boundary, Alaska landing strip. Approximately 200 yards along the gravel road from the Top of the World Highway, prior to entering the [redacted] mine site, the ground team encountered a "No Trespassing" sign posted to a tree along the public-access gravel road leading to multiple regulated mine sites.[2] See Attachment 1, **GIS Mine Claim Map with Investigative Notations**. EPA Special Agent [redacted] took a photograph of the posted sign, **Photograph 5**, which included the following language:

Photo 5: Sign posted along public access road leading into Canyon Creek.

*"Warning – Private Property. No Trespassing without the owners' express verbal or written authorization. This includes any and all **Government Agents**… This No Trespass notice is also subject to the following provisions: You are hereby notified that the owner(s) of this property requires all public officials, agents, or person(s) to abide by the "Supreme Law of the Land", the U.S. Constitution and the ratified Amendments thereto. Owner(s) refuse to permit any access, search, audit, assessment, or inspection whatsoever of this property without the presentation of a warrant, prepared as prescribed by the 4th and 14th Amendments to the U.S. Constitution… Violators Will Be Treated As Intruders. A government official, agent, or any other person(s) entering this property without the express consent of the owners(s) and without proper warrant as described above, will be considered an intruder attempting to trespass, extort, injure, threaten, harass, intimidate, or otherwise jeopardize the life and property of the owner of this property… **Use of necessary force may be used, at the sole discretion of the owner(s)**."*

[1] This gravel road appears as an unimproved road in the Alaska Atlas and Gazetteer™, Seventh Edition, Page 119, Copyright 2010 by Delorme.

[2] Permit inspection authority was not relied upon for access to mine sites; however, the applicable APDES General Permit requires permittees to allow ADEC personnel or authorized representatives access to the mine at reasonable times. See [redacted] Section 1.10, **Inspection and Entry**. Mines located in the Canyon Creek drainage area are mines operated by [redacted] (APMA [redacted]) under APDES General Permit [redacted] and mine APMA [redacted] operated by [redacted] under APDES General Permit [redacted]

The ground team chose not to access Canyon Creek from the south and returned along the gravel road to the Top of the World Highway. Along the highway and further to the west, the team located an unimproved ATV trail through the Kal Creek drainage and accessed the Canyon Creek drainage from the north, where investigative contact(s) unrelated to the [redacted] site were made. Mine operator(s) contacted advised that the unimproved gravel road, which also runs through the [redacted] mine, is the commonly used route into and out of the Canyon Creek drainage area from the Top of the World Highway. On 08/21/13 at approximately 5:10PM, the ground team traveled south along the public-access gravel road and through the [redacted] mine site to the Top of the World Highway. The ground team conducted no investigative activity at [redacted] mine on this day. No signage was observed as the ground team traveled south along the gravel road to the Top of the World Highway.

4.0 Mine Discharge Investigation on August 22, 2013

On 08/22/13 at approximately 11:51AM and as reported in Section 2.0 of this report, [redacted] mechanical placer mine (APMA [redacted] was over flown by a law enforcement aircraft and again observed to be discharging turbid effluent from a settling pond into waters of the United States. A waypoint recorded by the aircraft for this discharge indicated that the discharge was occurring on state-owned public lands immediately north of [redacted] federal-patent claim. This information together with coordinates for the observed discharge was communicated to an investigative ground team which was dispatched to the mine for further investigation.

On 08/22/13, an investigative ground team comprised of EPA Special Agents [redacted] ADEC Criminal Investigator [redacted] and BLM Special Agent [redacted] accessed the Canyon Creek drainage from the north by means of ATVs using the previously-referenced unimproved ATV trail located to the west of [redacted] mine site.

On 08/22/13 at approximately 4:15PM, as the team approached the point of discharge from the north using the public-access gravel road leading to the Top of the World Highway, a side-by-side ATV with two [unknown] occupants and a small dog was encountered traveling along the road from the south. This contact occurred at miner [redacted] state claim, approximate coordinates [redacted]°. See Attachment 1, **GIS Mine Claim Map with Investigative Notations**. Investigative team members wore visible law enforcement clothing, identified themselves as law enforcement officers and engaged the occupants in cordial and mine-related conversations. This contact was audio recorded by ADEC Investigator [redacted] who joined the contact already in progress.[3] The side-by-side ATV occupants identified themselves as [mine operator] [redacted]

[3] The audio recorded portion of this contact lasted approximately 5:16 minutes until its conclusion and is more thoroughly reported in a separate Investigative Activity Report (IAR).

[redacted] and [redacted] adult son, [redacted] During the recorded portion of this contact, [redacted] orally consented for the team to traverse his claim to reach the highway and to collect samples from creeks on his property.[4] On 08/22/13 at approximately 4:20PM this contact concluded and [redacted] and his son continued northward and the ground team continued southward along the gravel road. An additional audio-recorded contact was made of [redacted] on this day at approximately 5:55PM and is reported in a separate IAR. [redacted] wife, [redacted] joined the 5:55PM conversation already in progress and was also audio-recorded.

The ground team departed [redacted] mine at approximately 6:30PM on 08/22/13.

5.0 Mine Overview

Based on observations made by the ground team at [redacted] mine site on 08/22/13 and on the review of aerial photographs taken by Special Agent [redacted] between 08/19/13 and 08/22/13, it was determined that the source of the turbid discharge was the final settling pond in a long series of interconnected ditches and settling ponds originating at the mine's two washplants, located approximately 1.5 miles upstream from the point of discharge into Canyon Creek. The mine's washplants and settling pond network is located along **Woods Creek** and **Camp Creek** which are tributaries to **Canyon Creek**, which flows into the **Fortymile River**.

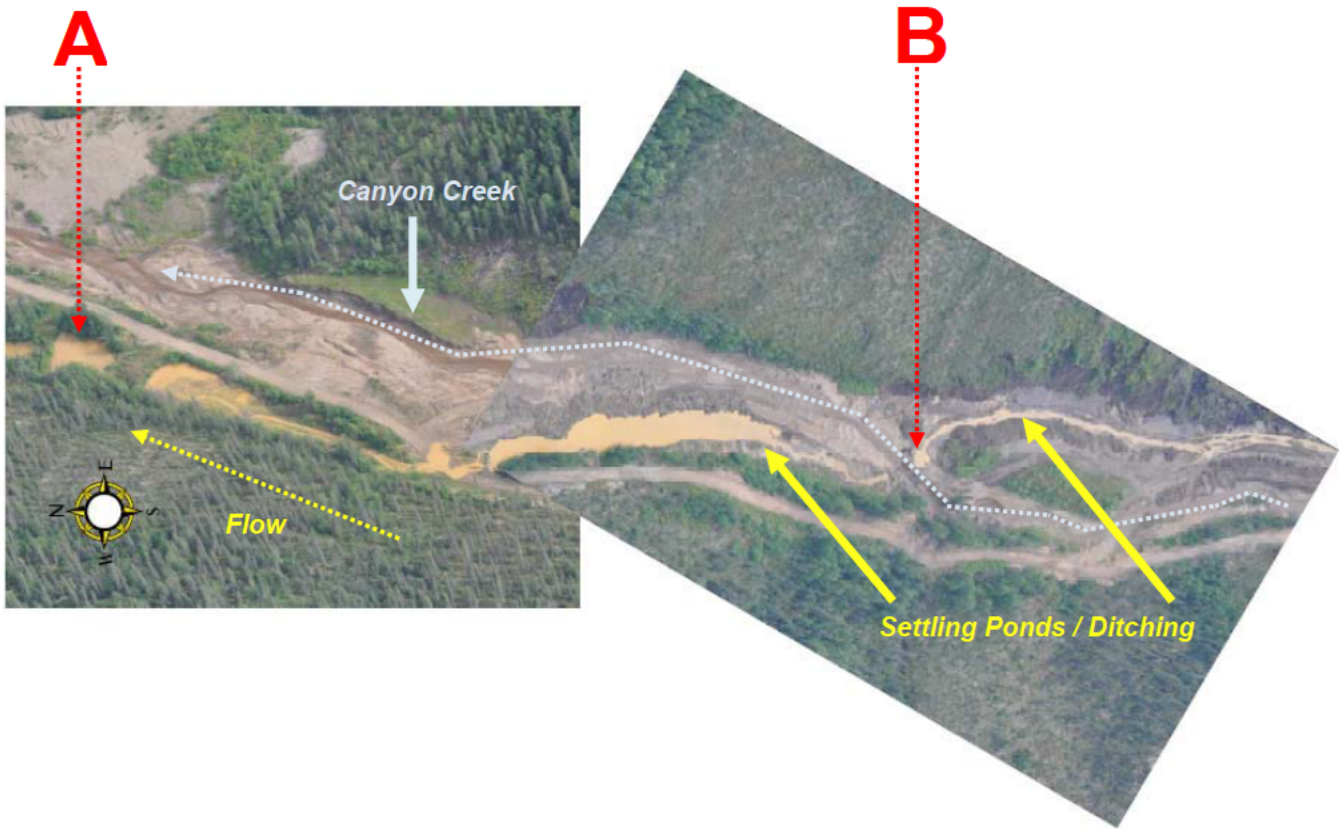
Because of the extended length of the interconnected turbid settling pond and ditch network at this mine site, aerial images taken by Special Agent [redacted] were composited with discernible reference points to demonstrate the relationship between the final settling pond's discharge and the washplants. Included in this report for reference purposes are photographic **Composite Images** 1 through 4 taken by Special Agent [redacted] during the over flights of the mine between 08/19/13 and 08/22/13.[5]

Also included with this report is Attachment 1, titled **GIS Mine Claim Map with Investigative Notations.**[6]

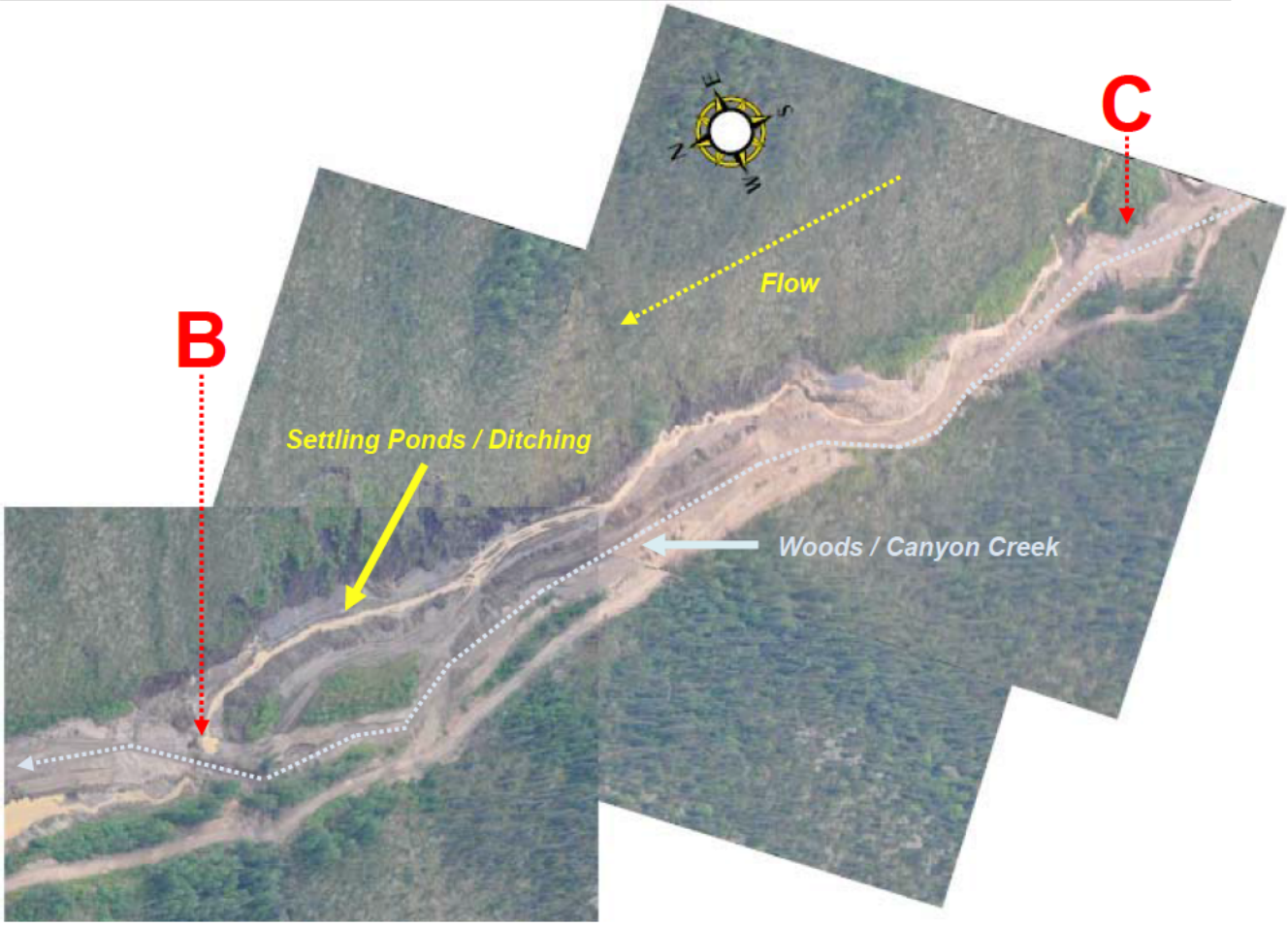
[4] Though [redacted] consent was not required for such investigative activity, it was obtained nonetheless.
[5] These images were composited by EPA Special Agent [redacted] for this report. The composites were made for reference purposes only. Superimposed cardinal points are approximated for these images.
[6] Attachment 1, headed **GIS Mine Claim Map with Investigative Notations,** incorporates a number of the same reference areas as the presented photographic Composite Images. Attachment 1 utilizes shape files depicting the status of state mine claims in relation to investigative activity and observations made by EPA-CID in the field. Shape file data titled "Alaska DNR State Mine Claims" was provided to EPA-CID by BLM and was originally sourced from the Alaska Department of Natural Resources (DNR). Investigative notations were geo-referenced onto the map by EPA Special Agent [redacted] using approximate GPS coordinates.

Composite Image 1 of 4: Discharge Channels from Final Settling Pond to Reference Point A

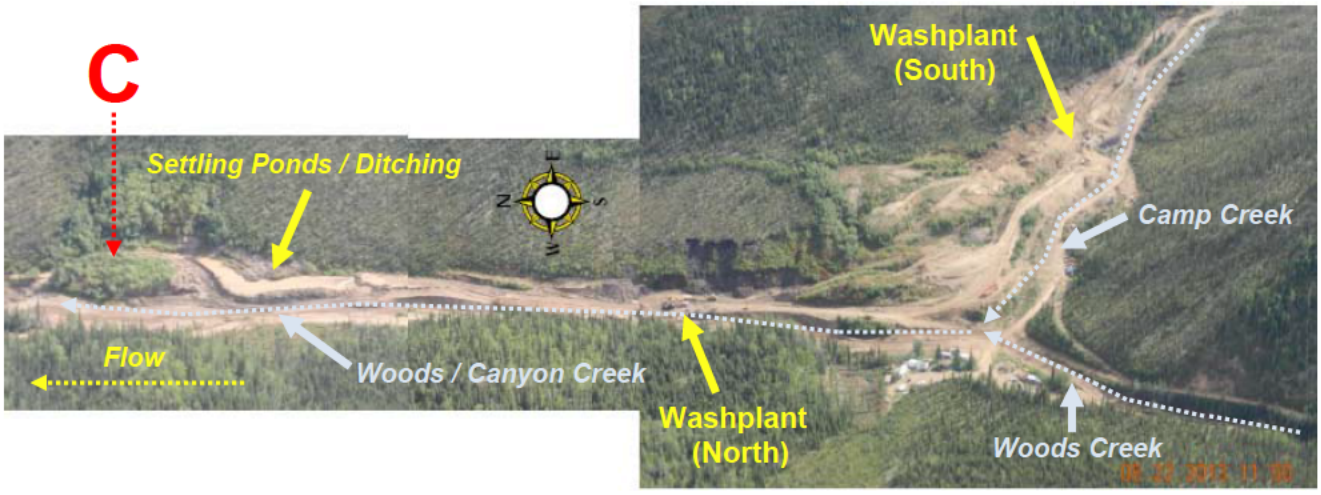
Composite Image 2 of 4: Moving Towards Washplants - Reference Point A to Reference Point B



Composite Image 3 of 4: Moving Towards Washplants - Reference Point B to Reference Point C



Composite Image 4 of 4: Reference Point C to Washplants



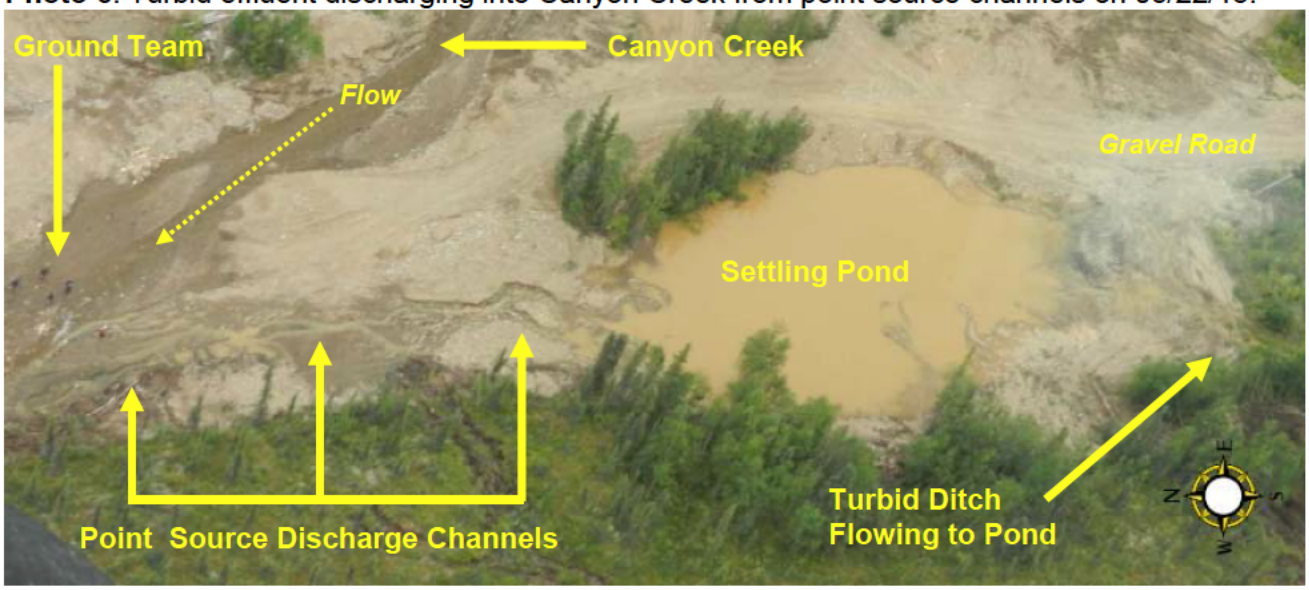
6.0 Point Source Discharge from Settling Pond into Canyon Creek

On 08/22/13 at approximately 4:23PM, while traveling south and parallel to Canyon Creek along the gravel road, the ground team encountered a turbid settling pond discharging visibly turbid effluent into Canyon Creek, a water of the United States. This settling pond was the same pond identified previously by the aircraft as the source of discharge from [redacted] mine site. For information concerning the location of the discharge relative to mine claim status, see Attachment 1, **GIS Mine Claim Map with Investigative Notations**.

Photographic evidence of the effluent discharge on the afternoon of 08/22/13 was documented from an aerial perspective by Special Agent [redacted] and from the ground-level perspective by Special Agent [redacted] who made photographs and a video recording of multiple point source channels discharging from this settling pond into Canyon Creek.

Photograph 6 was taken by EPA Special Agent [redacted] on 08/22/13 at approximately 4:37PM and depicts an aerial perspective of the discharging settling pond. Visible on the ground are members of the investigative ground team. Reference DSCN1718.

Photo 6: Turbid effluent discharging into Canyon Creek from point source channels on 08/22/13.



Photograph 7 was taken by Special Agent [redacted] on 08/22/13 at approximately 5:00PM and depicts a downstream and northerly view of the discharging turbid settling pond.

Photograph 8 was taken by Special Agent [redacted] on 08/22/13 at approximately 5:01PM and depicts a ditch flowing turbid water into the settling pond from the upstream network of interconnected turbid settling ponds and ditches.

Photo 7: Final settling pond before discharge.

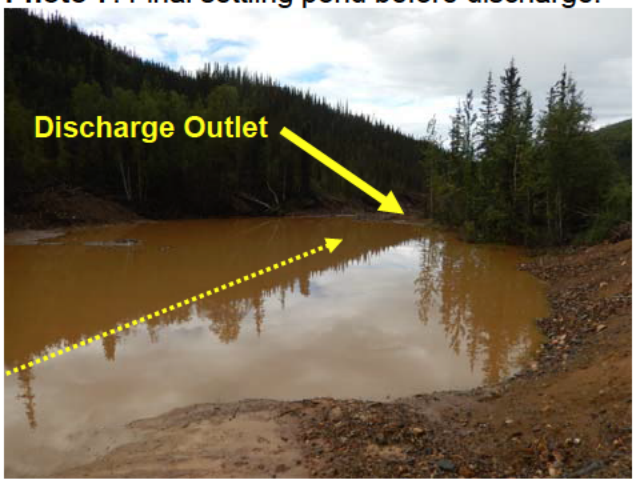


Photo 8: Pond connected to larger network.

Photograph 9 and **Photograph 10** are excerpts from video DSCN0825 taken by Special Agent [redacted] at approximately 5:12PM and depict multiple channels discharging turbid effluent from the settling pond into Canyon Creek. The ATVs in the picture belong to the investigative team and are parked along the gravel road.

Photo 9: Point source discharge into creek.

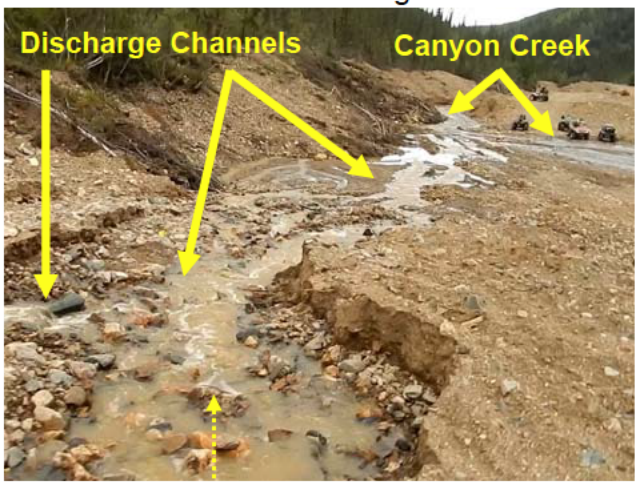


Photo 10: Point source discharge into creek.

7.0 Sample Collection

Because a visibly turbid point source discharge was observed by the ground team, turbidity monitoring was conducted pursuant to a Quality Assurance Project Plan (QAPP) and performed by Special Agent [redacted] who donned nitrile gloves before filling uniquely identified sample cells at the surface water level, with the mouth of each sample cell facing in an upstream direction. Each sample cell was filled three times with water from the designated sampling station before filling the sample cell for analysis purposes.

The triple-rinse of each sample cell and the collection of the monitoring sample were conducted in a manner that did not create visible turbidity at the sample station. Following collection of each sample in a uniquely identified sample cell, the sample was secured into a compartmentalized clear plastic container and controlled by Special Agent [redacted] until analysis using a calibrated Hach™ 2100Q portable turbidimeter.

Field notations and a sketch of sample locations were made contemporaneously by Special Agent [redacted] Photographs related to sample locations were made by Special Agent [redacted] using a Nikon Coolpix S9500 camera. Approximate decimal coordinates for sample locations were marked using a Garmin Montana® 650 GPS unit.

For reference purposes, **Photograph11,** taken by Special Agent [redacted] on 08/22/13 at approximately 4:35PM and is annotated to depict the approximate sample station locations for the six samples collected at the northernmost (downstream) area of [redacted] mine. Three additional samples were collected upstream of [redacted] washplants and are reported in Section 11 of this report. Reference DSCN1692.

Photo 11: Approximate location of Sample Stations 1 through 6.

8.0 Turbidity Monitoring of Point Source Discharge into Canyon Creek

Multiple point source channels were observed discharging turbid effluent from the final settling pond in a long network of interconnected ditches and settling ponds. EPA Special Agent [redacted] assisted by EPA Special Agents [redacted] and [redacted], identified three Sample Stations from these channels and monitored turbidity from each station as reported below.

8.1 Sample Station 2 (Discharge)

On 08/22/13 at approximately 4:32PM, Special Agent [redacted] collected a sample of effluent from one of the discharge channels and designated it **Sample 2**.[7] The sample cell was filled directly from the discharge channel as it flowed from the settling pond and immediately before entering the creek. As reported in Section 11 of this report, discharge **Sample 2** resulted in a reading of 196 NTUs.

Photograph 12 and **Photograph 13** were taken by Special Agent [redacted] on 08/22/13 at approximately 4:33PM and depict the source location for the collection of a discharge sample from **Sample Station 2**. Additional discharge channeling from the settling pond (not visible in these pictures) can be seen in the background as well as the impacted Canyon Creek receiving stream.

Photo 12: Sample Station 2 (Discharge).

Photo 13: Sample Station 2 (Discharge).

8.2 Sample Station 3 (Discharge)

On 08/22/13 at approximately 4:34PM, Special Agent [redacted] collected a sample of effluent from another of the settling pond's discharge channels and designated it **Sample 3**.[8] The sample cell was filled directly from the discharge channel as it flowed from the pond and immediately before entering the creek. As reported in Section 11 of this report, discharge **Sample 3** resulted in a reading of 253 NTUs.

Photograph 14 and **Photograph 15** were taken by Special Agent [redacted] on 08/22/13 at approximately 4:34PM and depict the source location for the collection of a discharge sample from **Sample Station 3**. Photograph 15 also depicts the turbid effluent as it flowed

[7] Approximate coordinates for Sample Station 2 were marked [redacted]
[8] Approximate coordinates for Sample Station 3 were marked [redacted]

into the clear water of Canyon Creek. Turbidity monitoring in Canyon Creek upstream of the discharge was conducted and is reported in Section 11 of this report.

Photo 14: Sample Station 3 (Discharge).

Photo 15: Sample Station 3 (Discharge).

8.3 Sample Station 5 (Discharge)

On 08/22/13 at approximately 4:44PM, Special Agent [redacted] collected a sample of effluent in a main channel from the settling pond's discharge and designated it **Sample 5**.[9] The sample cell was filled directly from the discharge channel as it flowed from the pond. As reported in Section 11 of this report, discharge **Sample 5** resulted in a reading of 283 NTUs. **Photograph 16** and **Photograph 17** were taken by Special Agent [redacted] on 08/22/13 at approximately 4:44PM and depict the source location for the collection of a discharge sample from **Sample Station 5**.

Photo 16: Sample Station 5 (Discharge).

Photo 17: Sample Station 5 (Discharge).

[9] Approximate coordinates for Sample Station 5 were marked as [redacted]

9.0 Turbidity Monitoring Downstream of Discharge into Canyon Creek

It was observed that as the discharged effluent entered Canyon Creek and mixed with the larger volume of clear creek water, a visibly turbid effluent plume remained and impacted the creek. Special Agent [redacted] identified two sample stations in Canyon Creek downstream of the discharge and monitored turbidity from each station. No other sources of turbid water were observed entering Canyon Creek between the discharge points into Canyon Creek and the downstream sample stations.

9.1 Sample Station 1 (Downstream)

On 08/22/13 at approximately 4:26PM, Special Agent [redacted] monitored the turbidity in Canyon Creek approximately 200 feet downstream from the point of discharge and after the effluent mixed with the larger volume of clear creek water. This monitoring location was designated **Sample Station 1**.[10] The sample cell was filled directly from the creek. As reported in Section 11 of this report, downstream **Sample 1** resulted in a reading of 28.2 NTUs.

Photograph 18 was taken by Special Agent [redacted] on 08/22/13 at approximately 4:26PM and depicts the source location for the collection of a downstream creek sample from **Sample Station 1**. The person appearing in the photograph is Special Agent [redacted], identifying the referenced sample station's location.

Photo 18: Sample Station 1 (Downstream)

[10] Approximate coordinates for Sample Station 1 were marked as [redacted]

9.2 Sample Station 6 (Downstream)

On 08/22/13 at approximately 4:52PM, Special Agent [redacted] identified an additional downstream turbidity monitoring station in Canyon Creek. This station, designated **Sample Station 6**, was located approximately 485 feet downstream from the point of discharge.[11] The sample cell was filled directly from the creek. As reported in Section 11 of this report, downstream **Sample 6** resulted in a reading of 18.8 NTUs.

Photograph 19 and **Photograph 20** were taken by Special Agent [redacted] on 08/22/13 at approximately 4:53PM and depict the source location for the collection of a downstream creek sample from **Sample Station 6**. The person appearing in the photograph is Special Agent [redacted], identifying the referenced sample station's location.

Photo 19: Sample Station 6 (Downstream)

Photo 20: Sample Station 6 (Downstream)

10.0 Natural Background Turbidity Conditions

Because a point source discharge was observed and monitored at this mine site, it was necessary to measure naturally occurring background turbidity conditions in the receiving stream to determine whether a possible violation of this placer mine's General Permit existed.[12] Background turbidity was measured at three sample stations, all located upstream of the final settling ponds discharge channels into Canyon Creek.

For purposes of background monitoring, Special Agent [redacted] selected suitable sampling stations in **Canyon Creek** near the settling pond and in **Woods Creek** and **Camp Creek**,

[11] Approximate coordinates for Sample Station 6 were marked as [redacted]
[12] The APDES General Permit places **Limitations & Monitoring Requirements** for turbidity discharges at an instantaneous maximum of no more than "5 NTUs above natural conditions." APDES General Permit [redacted] Sec. 2.0.

which flow into **Canyon Creek** north of the mine's washplants. Canyon Creek flows into the **Fortymile River**.

Photograph 11 on page 11 depicts the relative location of background **Sample Station 4** to the point of discharge. **Photograph 21** below depicts the relative location of background **Sample Station 7** and background **Sample Station 8/9** to the mine's two washplants. This photograph is a composite of photographs DSCN1626 and DSCN1627 taken by Special Agent [redacted] on 08/22/13 at approximately 11:52AM.

Photo 21: Approximate location of Sample Station 7 and Sample Station 8/9.

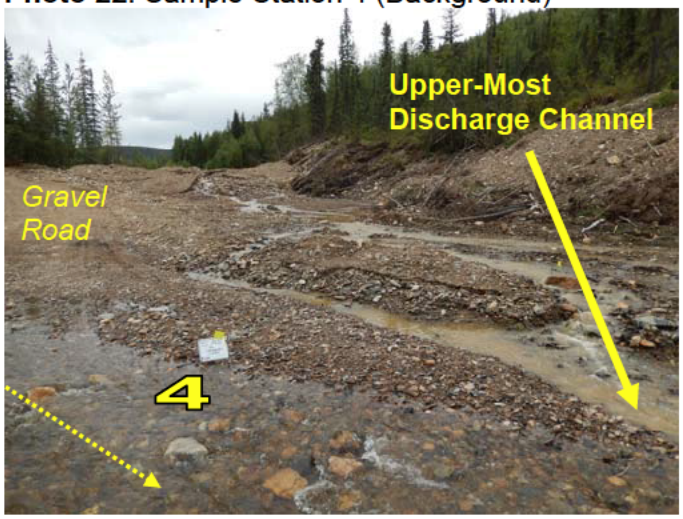
10.1 Sample Station 4 (Background – Canyon Creek)

On 08/22/13 at approximately 4:36PM, **Sample Station 4** was monitored in Canyon Creek approximately 20 feet upstream from the upper-most discharge channel, where the settling pond's effluent discharged into the creek creating a turbid plume.[13] The sample cell was filled directly from the creek. As reported in Section 11 of this report, background **Sample 4** resulted in a reading of 1.89 NTUs.

Photograph 22 was taken by Special Agent [redacted] on 08/22/13 at approximately 4:36PM and depicts the source location for the collection of a background creek sample from **Sample Station 4**. Also see Photograph 11 on page 11 concerning this sample's source.

[13] Approximate coordinates for Sample Station 4 were marked as [redacted]

Photo 22: Sample Station 4 (Background)



10.2 Sample Station 7 (Background – Camp Creek)

On 08/22/13 at approximately 6:10PM, **Sample Station 7** was monitored in Camp Creek approximately 1.6 miles from the final settling's pond point of discharge and upstream from the (south) washplant.[14] The sample cell was filled directly from the creek. As reported in Section 11 of this report, background **Sample 7** resulted in a reading of 2.59 NTUs.

Photograph 23 and **Photograph 24** were taken by Special Agent [redacted] on 08/22/13 at approximately 6:12PM and depicts the source location for the collection of a background creek sample from **Sample Station 7**.

Photo 23: Sample Station 7 (Background)

Photo 24: Sample Station 7 (Background)

[14] Approximate coordinates for Sample Station 7 were marked as N 64.09692° / W 141.11203°.

10.3 Sample Station 8/9 (Background – Woods Creek)

This sample station was selected for replicate sampling. On 08/22/13 at approximately 6:20PM, **Sample Station 8/9** was monitored in Woods Creek approximately 1.5 miles from the final settling's pond point of discharge and upstream of the (north) washplant.[15] The sample cells were filled directly from the creek. As reported in Section 11 of this report, replicate background **Sample 8** resulted in a reading of 9.74 NTUs and replicate background **Sample 9** resulted in a reading of 11.5 NTUs.

Photograph 25 and **Photograph 26** were taken by Special Agent [redacted] on 08/22/13 at approximately 6:20PM and depicts the source location for the collection of a background creek samples from **Sample Station 8/9**. The person appearing in these pictures is Special Agent [redacted] wearing an ATV safety helmet.

Photo 25: Sample Station 8/9 (Background)

Photo 26: Sample Station 8/9 (Background)

11.0 Sample Analysis

Samples were analyzed in the field for turbidity[16] by Special Agent [redacted] using a Hach™ 2100Q portable turbidimeter, compliant with USEPA Method 180.1 design criteria. This method measures turbidity in nephelometric turbidity units (NTU) through comparison of the intensity of light scattered by the sample against a standard reference suspension.[17] The 2100Q uses a tungsten filament lamp source with a silicone photodiode detector

[15] Approximate coordinates for Sample Station 8/9 were marked as [redacted]
[16] Turbidity can be defined as the cloudiness or haziness of a fluid caused by suspended solids. In addition, discussion in the Mechanical Placer Mine Fact Sheet for General Permit [redacted] references U.S. EPA's Alaska Placer Mining Metals Studies conducted in 1998 and 1999 and notes that EPA recognizes turbidity can be used as a surrogate for metal levels in the effluent of placer mines. Mechanical Placer Fact Sheet for General Permit [redacted] (pg. 19), http://dec.alaska.gov/Water/WPSdocs/[redacted]_docs.pdf.
[17] Method 180.1, Determination of Turbidity by Nephelometry, Revision 2.0, August 1993.

which is designed to measure turbidity from 0 to 1000 NTU without dilution of the sample.[18]

On 08/22/13 between approximately 6:56PM and 7:01PM, Special Agent [redacted] assisted by Special Agents [redacted] and [redacted] analyzed the collected samples using a Hach 2100Q portable turbidimeter S/N 10080C004325, which was successfully calibrated on the morning of 08/22/13 at 7:29AM. Prior to sample analysis, a successful instrument performance check was performed onsite on 08/22/13 at 6:53PM. See attached data log confirming calibration and instrument performance check(s). Sample analysis results were recorded in the instrument's data logger and noted in the field. See attached data log providing analysis results.

Consistent with the Quality Assurance Project Plan (QAPP) and because of holding time limitations for the analysis of turbidity samples, sample cell contents were discarded in the field after analysis following a successful post-analysis instrument performance check conducted for quality control purposes.

Table 1 below provides a summary of the sample analysis results together with a description of the corresponding sample station's location.

Graphic 1 below is provided for reference and depicts the relative location of sample stations to the point of discharge from the final settling pond. The graphic is not drawn to scale. The graphic rendering of interconnected ponds and ditches is presented to show the relative relationship among pertinent features at the site and is not reflective of the actual number of ponds or the extensive ditching network observed at the site as depicted in **Composite Photos** 1 through 4 in Section 5 of this report.

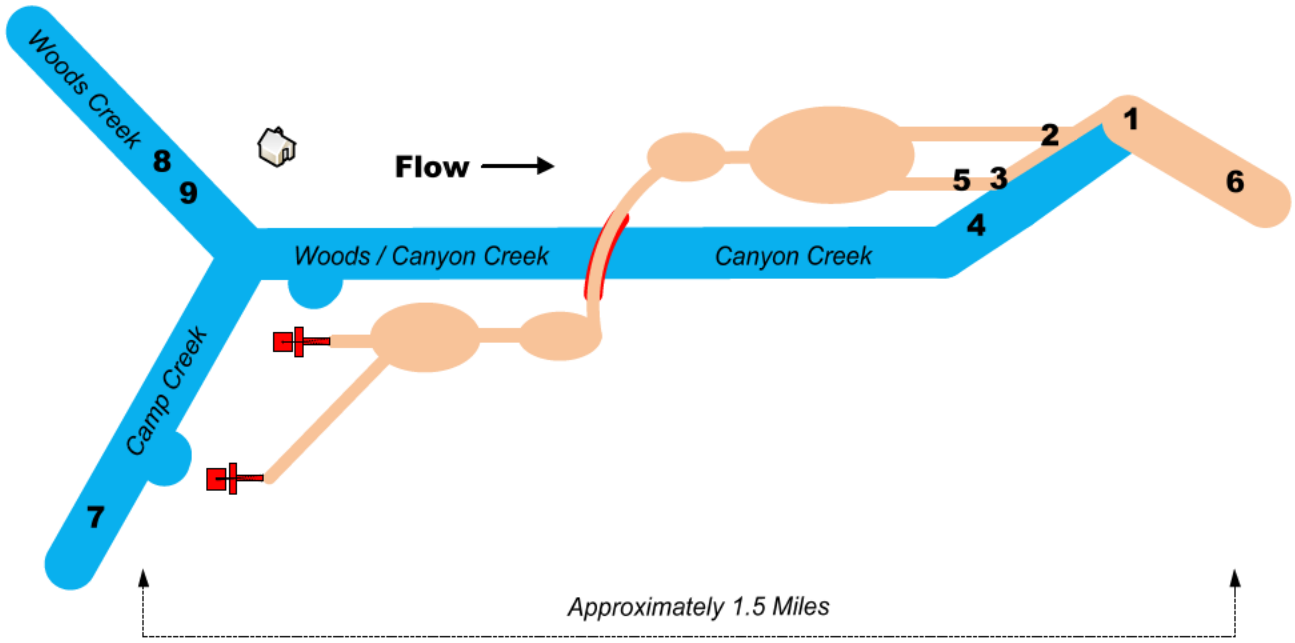
[18] Hach 2100Q User Manual, Edition 1, January 2010.

Table 1: Turbidity Analysis Summary*

Station	Sample Description	(NTUs)
1	Downstream sample *(Canyon Creek)*	28.2
2	Discharge sample *(Point source)*	196
3	Discharge sample *(Point source)*	253
4	Background sample *(Canyon Creek)*	1.89
5	Discharge sample *(Point source)*	283
6	Downstream sample *(Canyon Creek)*	18.8
7	Background sample *(Camp Creek)*	2.59
8/9	Background sample *(Woods Creek)*	9.74
8/9	Background sample *(Woods Creek)*	11.5

* See attached data log.

Graphic 1: Sample Stations



12.0 Surface Water Entering Turbid Settling Ponds and Ditches

On 08/22/13, investigators at the mine site observed multiple examples of surface water and/or drainage water entering into the mine's extended network of interconnected turbid settling ponds and ditches.[19] In addition, as reported in a separate Investigative Activity Report (IAR) referencing audio recorded statements made by [redacted] to investigators on 08/22/13, [redacted] confirmed his knowledge of surface waters draining into his settling ponds. This knowledge includes what [redacted] described as a *"little crick"* that feeds into *"that lower pond."*[20]

The approximate location for each reported example of surface water drainage into the settling pond and ditch network is presented in Attachment 1, **GIS Mine Claim Map with Investigative Notations**.

Photograph 27 was taken by EPA Special Agent [redacted] on 08/22/13 at approximately 5:47PM and depicts a stream of surface water flowing directly into the mine's interconnected network of turbid settling ponds and ditches. Visible in the foreground is Woods / Canyon Creek, seperated from the settling ponds by a dirt berm.

Photograph 28 is a closer perspective of Photograph 27, depicting the surface flow into the settling pond. Reference IMG616.

Photo 27: Surface water flowing into turbid ponds. **Photo 28**: A closer perspective.

[19] The General Permit requires a permittee to follow **Best Management Practices** (BMP) which specify that "[t]he flow of surface waters into the plant site shall be interrupted and these waters diverted around and away from incursion into the plant site. APDES General Permit [redacted] Sec. 3.2.1.
[20] Notably, see the IAR which includes the second contact of [redacted] on 08/22/13, near timestamp 5:00, among other timestamps.

Photograph 29 represents a frame from video recording DSCN2494 taken by EPA Special Agent [redacted] on 08/22/13 at approximately 5:30PM. This photograph depicts the apparent emergence of clear flowing water to the surface along the gravel road which runs parallel to Woods / Canyon Creek. This clear flowing surface water was observed and video recorded flowing directly into the mine's turbid network of settling ponds and ditches.

Photograph 30, also taken by Special Agent [redacted] at approximately the same time, depicts the confluence of the clear flowing surface water into the turbid settling pond and ditch network.[21] Reference DSCN2493.

Photo 29: Water emerges and flows across surface into turbid pond and ditch network.

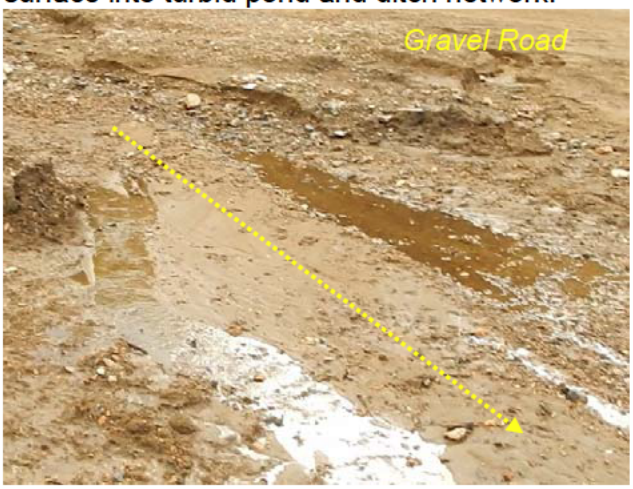


Photo 30: Surface water flows into turbid ditch network.

Photograph 31 represents a frame from video recording DSCN2448 taken by EPA Special Agent [redacted] on 08/22/13 at approximately 4:45PM. This frames depicts clear surface water flowing directly into the mine's point source channels, previously referenced in conjunction with **Sample Stations 2, 3,** and **5**. The introduction of this surface water drainage occurred downstream from the mine's final settling pond and immediately prior to the channels' discharge into Canyon Creek.

Photograph 32 represents a frame from the same video recording and provides a closer perspective of the clear surface water flowing into the turbid discharge channel.

[21] Photos 29 and 30 were taken at approximate coordinates [redacted]

Photo 31: Clear surface water flowing into point source channel.

Photo 32: Same.

13.0 Washplants and Washplant Beneficiation Water

On 08/22/13, investigators at [redacted] mine observed two washplants, neither of which was actively processing at the time. For purposes of this report, these washplants are termed the "South Washplant," along Camp Creek and the "North Washplant," along Woods / Canyon Creek and closer to the main mine camp. For an aerial perspective of the relative location of these washplants at the mine, see **Photo 21** on page 16 of this report. Special Agent [redacted] observed that each washplant was located near a creek where a dam created an artificial freshwater [pond] in the creek. On the bank of each fresh water pond was a large pump with a hose leading from the pond to the washplant. Based on this configuration, it appeared to Special Agent [redacted] that each washplant was configured to draw fresh creek water for the washplant's beneficiation process.[22]

In addition, as reported in a separate Investigative Activity Report (IAR) referencing audio recorded statements made by [redacted] to investigators on 08/22/13, [redacted] confirmed that he does not recirculate his [washwater] and commented that *"The creeks where I am in the headwaters, its steep and its narrow and I can't really see any way of really doing it. So I mean I've done it this way for thirty years with the ponds and stuff and I've had good luck."* [23]

[22] The General Permit specifies that "Effluent discharges are prohibited during periods when new water is allowed to enter the plant site. Additionally, there shall be no discharge as a result of the intake of new water." APDES General Permit [redacted] **Limitations & Monitoring Requirements**, Sec. 2.2.1.1.
[23] See the IAR which includes the second contact of [redacted] on 08/22/13, near timestamp 15:00.

13.1 North Washplant

Photograph 33 was taken by Special Agent [redacted] on 08/20/13 at approximately 12:39PM and depicts the North Washplant situated adjacent to a dammed portion of Woods / Canyon Creek. To the west of the washplant is Woods / Canyon Creek, flowing northward. To the east of the washplant is a continuation of the mine's turbid settling pond & ditching network, also flowing northward. Located upstream in the turbid ditching network is the South Washplant. Reference DSC0083.

Photo 33: North Washplant configured to draw fresh water from creek without recirculation.

Photograph 34 was taken by EPA Special Agent [redacted] on 08/22/13 at approximately 5:55PM and depicts a ground level perspective of the North Washplant adjacent to a dammed portion of Woods / Canyon Creek. Visible in the photo is a pump with a hose resting in the pond. A longer blue-colored hose leads from the pump to the washplant.

Photograph 35 also taken by Special Agent [redacted] on 08/22/13 at approximately 5:53 PM and depicts the configuration of the pump and hoses in relation to the freshwater pond in Woods / Canyon Creek. Reference DSCN2522.

Photo 34: Washplant and pond water pump.

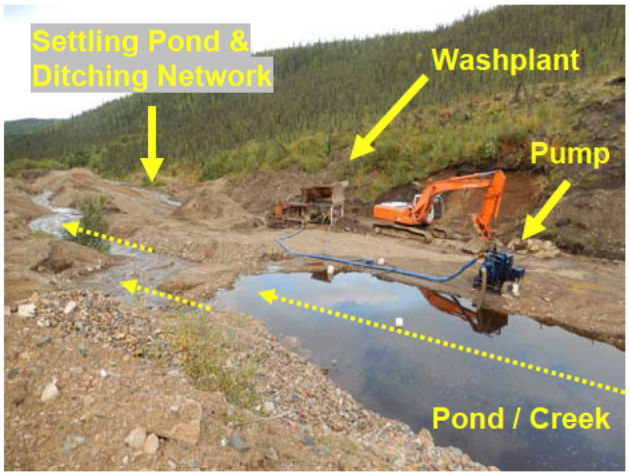
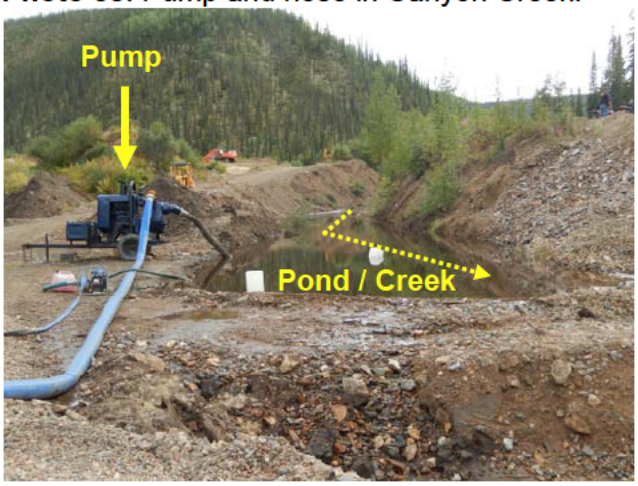


Photo 35: Pump and hose in Canyon Creek.



13.2 South Washplant

Photograph 36 was taken by Special Agent [redacted] on 08/20/13 at approximately 12:39PM and depicts the South Washplant situated adjacent to a dammed portion of Camp Creek. To the west of the washplant is Camp Creek, flowing into Woods / Canyon Creek. To the east of the washplant is the start of the mine's turbid settling pond and ditching network, also flowing northerly and past the North Washplant toward the point source discharge channels approximately 1.5 miles downstream. Reference DSC0081.

Photo 36: South Washplant (start of turbid settling pond & ditching network) configured to draw fresh water from creek without recirculation.

Photograph 37 was taken by EPA Special Agent [redacted] on 08/22/13 at approximately 6:08PM and depicts a ground level perspective of the configuration of the pump and hoses in relation to the freshwater pond in Camp Creek. Visible in the background is the South Washplant adjacent. Reference DSCN2536.

Photograph 38 was taken by Special Agent [redacted] on 08/22/13 at approximately 6:05PM and depicts the tail end of the South Washplant and the apparent start of the mine's network of turbid settling ponds and ditches. Reference DSCN2533.

Photo 37: Pump and hoses in Camp Creek.

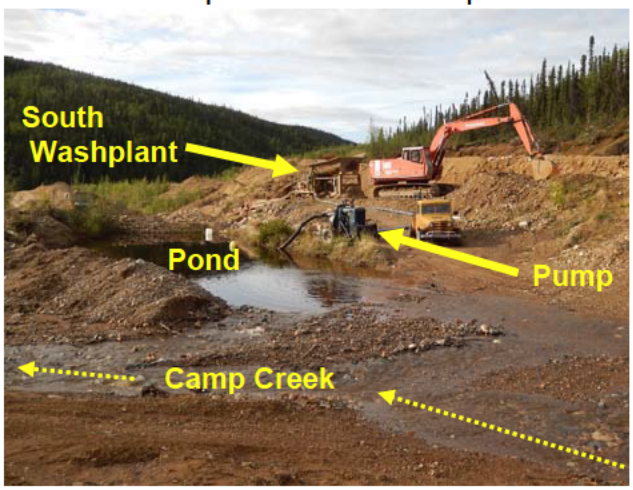


Photo 38: Washplant & start of turbid network.

14. Glossary of Terms

Terms used in this Investigative Activity Report (IAR) have specific definitions under the meaning of the APDES General Permit [redacted] and appear in Appendix C of the permit, unless otherwise noted below.

APMA*	Annual Placer Mining Application (APMA) is an application submitted to the Alaska Department of Natural Resources (DNR) intended to assist miners with the multi-jurisdictional permitting process required for mining and reclamation. If the applicant indicates, the APMA can serve as a Notice of Intent (NOI) for the issuance of an APDES Permit.
APDES	Alaska Pollutant Discharge Elimination System (APDES) is the State of Alaska's program, approved by EPA under 33 U.S.C. 1342(b), for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits and imposing and enforcing pretreatment requirements under 33 U.S.C. 1317, 1328, 1342, and 1345.
Best Management Practices (BMPs)	Schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the United States. BMPs also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, waste disposal, or drainage from mined areas.
Discharge	When used without qualification, means the discharge of a pollutant.
Drainage Water	Incidental surface waters from diverse sources such as rainfall, snow melt or permafrost melt.
Effluent	The segment of a wastewater stream that follows the final step in a treatment process and precedes discharge of the wastewater stream to the receiving environment.
Instantaneous Maximum	The maximum value measured at any time.
Make-up Water	That volume of water needed to replace process water lost due to evaporation and seepage in order to maintain the quantity necessary for the operation of the beneficiation process.
Nephelometric Turbidity Unit (NTU)	An expression of the optical property that causes light to be scattered and absorbed rather than transmitted in a straight line through the water.

Permittee	A company, organization, association, entity, or person who is issued a wastewater permit and is responsible for ensuring compliance, monitoring, and reporting as required by the permit.
Placer Mining*	Involves the mining and extraction of gold ore or other heavy metals and minerals primarily from alluvial deposits. These deposits may be in existing stream beds or ancient, often buried stream deposits. Essential components of placer mining include overburden removal, mining of the gold placer gravels, and processing (gold recovery).
Plant Site	The area occupied by the mine, necessary haulage ways from the mine to the beneficiation process, the beneficiation area, the area occupied by the wastewater treatment storage facilities and the storage areas for waste materials and solids removed from the wastewaters during treatment.
Point Source*	Point source (33 U.S.C. § 1362(14)) – means any discernible, confined, and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants may be discharged.
Receiving Waterbody	Waters such as lakes, rivers, streams, creeks, wetlands, or any other surface waters that receive wastewater discharges.
Sample Station*	The location from which a sample was collected.
Settling Pond*	Is a pond constructed to remove sediment and solids from water through gravity separation and retention time. The Mechanical Placer Fact Sheet for [redacted] Sec. 4.2.1. states that "Properly designed and operated settling ponds have been determined to be the best available technology used to treat wastewater and reduce pollution prior to discharge for the facilities authorized to discharge under this GP."
Sluice Box*	A sluice box is a device used for gravity concentration of mined metals, such as gold. Sluice boxes are commonly equipped with a trough and riffles to capture the gold which settles into the riffles, while allowing lighter materials such as soils and gravels to be washed through the box by flowing water.
Turbidity*	Turbidity can be defined as the cloudiness or haziness of a fluid caused by suspended solids.
Washplant*	The processes and equipment, including classifiers, sluices and flowing water, used to separate gold from soils, gravels, and ore for beneficiation.

***** Term used in this IAR without specific definition in the A[redacted] General Permit.

15.0 Attachments

1. GIS Mine Claim Map with Investigative Notations (1 page)
2. Field sketch & notes (2 pages)
3. Data log spreadsheet (1 page)
4. Daily instrument calibration (1 page)

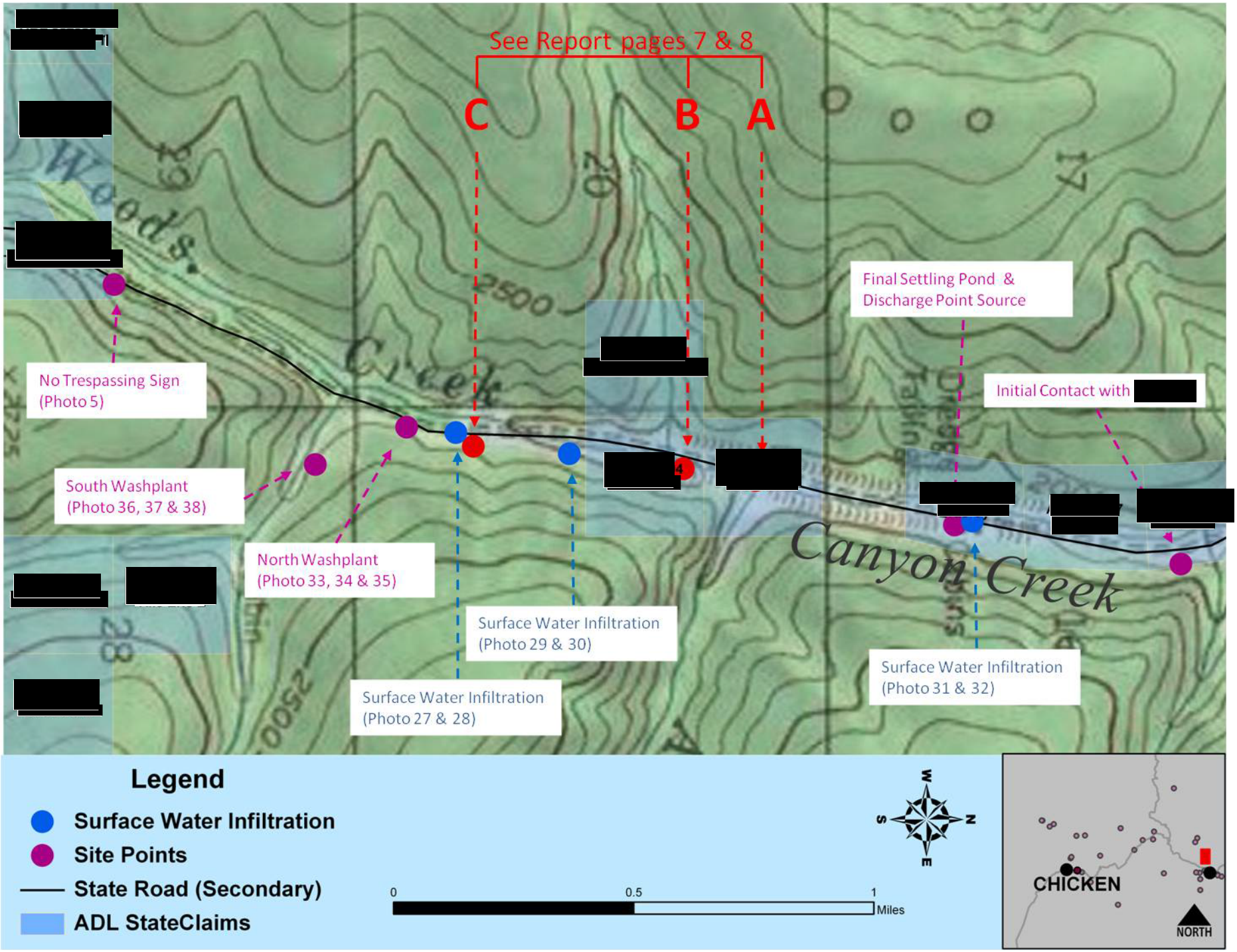
ATTACHMENT DIVIDER

1

GIS Mine Claim Map with Investigative Notations

Attachment 1 to IAR "Mine Discharge Investigation at APMA [redacted] [redacted] Mine (08/22/13)"

Case Number
1002-0097



ATTACHMENT DIVIDER

2

Alaska Mine Site 8/22/13
[redacted] 11:23

Site Coordinates
[redacted]

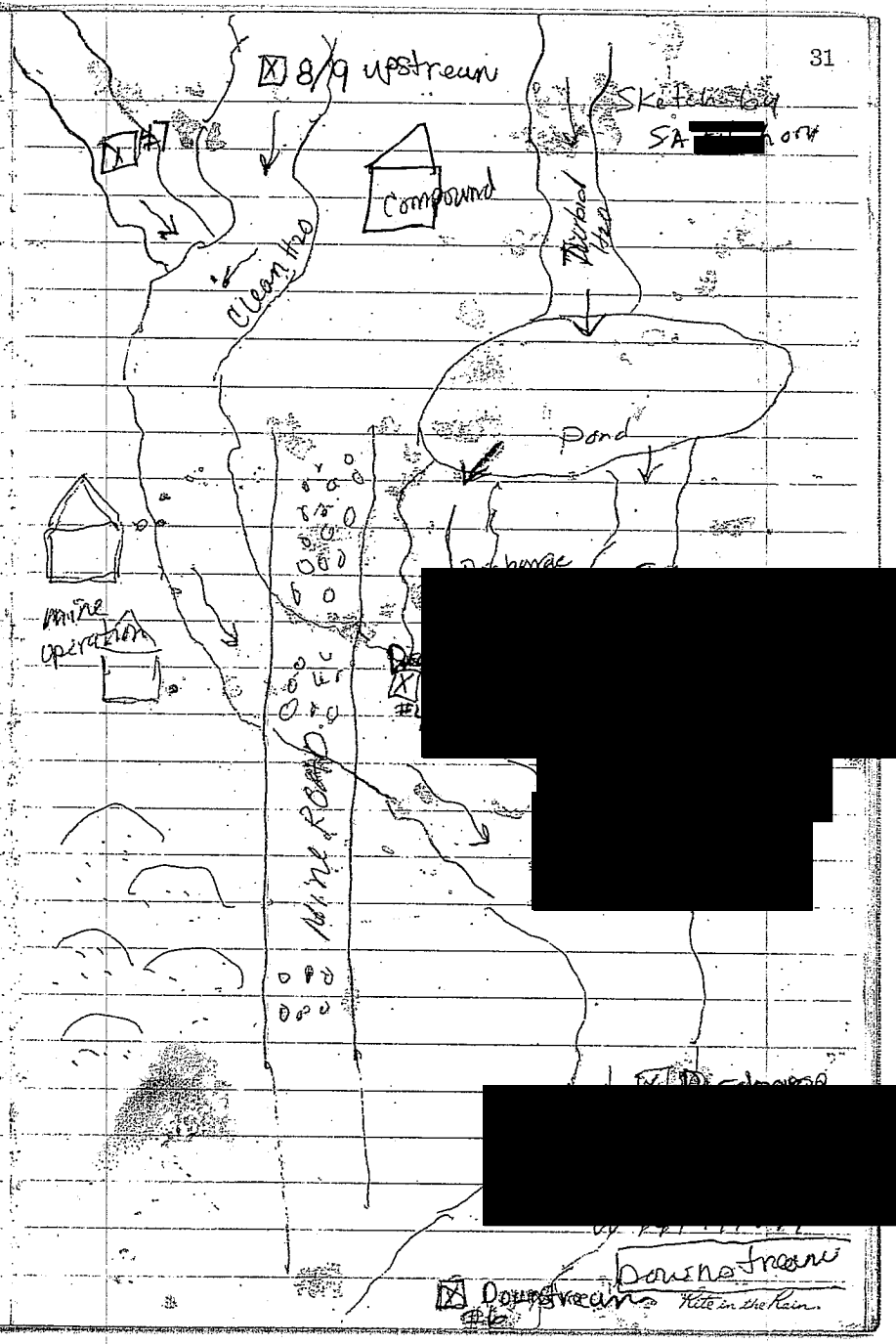
Verbal Consent was given to Agents to Access property by property owner [redacted]

Coordinates for Cell #4
[redacted]

Coordinates for Cell #5
[redacted]

[redacted]

* Forensics conducted by [redacted]



Turbidity

Data Analysis for [redacted] Site

18.54 Hrs 8/22/13

Validation = 10 NTU / Run 9.96 NTU (Past)

Blank 11 = 0.05 NTU / Run .10 NTU (Past)

Cell #1 = 28.2 NTU
Cell #2 = 196 NTU
Cell #3 = 253 NTU
Cell #4 = 1.89 NTU
Cell #5 = 283 NTU
Cell #6 = 18.8 NTU
Cell #7 = 2.59 NTU
Cell #8 = 9.74 NTU
Cell #9 = 11.5 NTU

Validation = 10 NTU / Run 9.85 (past)

ATTACHMENT DIVIDER

3

2100Q
S/N: 10080C004325
Software Version: 1.01

Date & Time	Operator I	Reading M	Sample ID	Sample Nu	Result	Unit	Notice	Cal.Curve	Cal.Time	Cal.Status	Std. 1 Non	Std. 1 Act.	Std. 2 Non	Std. 2 Act.	Std. 3 Non	Std. 3 Act.	Std. 4 Non	Std. 4 Act.
8/22/2013 19:02	KEG	Cal.Verifica			9.85	NTU	Verify Cal:	StablCal®	8/22/2013 7:29	OK								
8/22/2013 19:01	KEG	Normal			11.5	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 19:00	KEG	Normal			9.74	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 19:00	KEG	Normal			2.59	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 18:59	KEG	Normal			18.8	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 18:58	KEG	Normal			283	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 18:57	KEG	Normal			1.89	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 18:57	KEG	Normal			253	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 18:56	KEG	Normal			196	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 18:56	KEG	Normal			28.2	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 18:55	KEG	Normal			0.1	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 18:53	KEG	Cal.Verifica			9.96	NTU	Verify Cal:	StablCal®	8/22/2013 7:29	OK								
8/22/2013 7:36	KEG	Normal			0.11	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 7:35	KEG	Normal			0.12	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 7:33	KEG	Normal			2.67	NTU		StablCal®	8/22/2013 7:29	OK								
8/22/2013 7:30	KEG	Cal.Verifica			9.66	NTU	Verify Cal:	StablCal®	8/22/2013 7:29	OK								
8/22/2013 7:29	KEG	Calibration				NTU		StablCal®			20	19.8	100	101	800	786		

ATTACHMENT DIVIDER

4

8/22/2013 7:20AM

ADEC 2100Q S/N 10080C004325

CAL 10 NTU, LOT A3153, EXP JUN/14
CAL 20 NTU, LOT A3162, EXP JUN/14
CAL 100 NTU, LOT A3162, EXP JUN/14
CAL 800 NTU, LOT A3162, EXP JUN/14

* VERIFIED OP ID AND DATE/TIME ON INSTRUMENTS.

READINGS:

20 NTU → 19.8 NTU
100 NTU → 101 NTU
800 NTU → 786 NTU
VERIFIED 10 NTU → 9.66 (PASSED)

BLANK: CELL 1 → 0.11 NTU

[redacted]
8/22/13